REMARKS

In response to the Final Office Action dated February 9, 2007, claims 1 and 2 are amended, and claim 3 is cancelled. Claims 1, 2, and 4 are now active in this application. No new matter has been added.

As a preliminary matter, please note that claim 3 has been cancelled, and the limitation from claim 3 ("wherein the gas diffusion layer includes a structure in which a carbon powder is charged in a porous carbon substrate") has been inserted into claims 1 and 2. Claim 3 was a multiple dependent claim that depended from claim 1 or claim 2.

Thus, amended claim 1 corresponds to the previous claim 3 depending from claim 1, and amended claim 2 corresponds to the previous claim 3 depending from claim 2.

In other words, no new combination of limitations is presented by the amended claims. **Thus, no new issues are raised** by this amendment.

Claims 1-4 were rejected under 35 U.S.C. 102(e) as anticipated by U.S. Patent 6,503,655 to Petricevic et al. Applicant respectfully traverses these rejections. Further, claim 3 has been cancelled.

Claims 1-2, and 4 were rejected under U.S.C. 103(a) as unpatentable over Applicant's alleged admission of prior art in view of U.S. Patent Publication U.S. 2004/137303 to Kuroki et al. Applicant respectfully traverses these rejections.

Claim 1 recites, in pertinent part, "comprising: a catalyst layer; and a gas diffusion layer stacked on the catalyst layer, wherein an arithmetic average roughness Ra of the surface of the gas diffusion layer on a side in contact with the catalyst layer is 11 μm or less, and wherein the gas diffusion layer includes a structure in which a carbon powder is charged in a porous carbon substrate."

Anticipation under 35 U.S.C. § 102 requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed Cir. 1987). Additionally, to establish *prima facie* obviousness under 35 U.S.C. § 103(a) requires that all the claim limitations must be taught or suggested by the prior art. *In re Rokya*, 490, F.2d 981, 180 USPQ 580 (CCPA 1974). At a minimum, the cited prior art does not disclose (expressly or inherently) the above recited limitation.

The Office Action, at page 3, asserts that Petricevic discloses all of the limitations of claims 1, 2, and 4 at column 1, lines 13-33. Specifically, the Office Action asserts that Petricevic, at column 2, lines 50-54 discloses carbon substrates. Further, the Office Action asserts that Petricevic discloses surface roughness on the same order of magnitude as a pore diameter of 1 μm (Example 1), and/or 10 μm (Example 2), and/or 0.1 μm (Example 5).

However, Petricevic, at column 2, lines 50-54, merely states "[i]n order to meet the abovementioned requirements, modified carbon papers, i.e. carbon papers which are densified on the surface by means of carbon black or graphite, are used in gas diffusion electrodes. However, these materials are **not satisfactory** in respect of surface smoothness and pore size." Note that the modified carbon papers of Petricevic are **"not satisfactory"** regarding surface smoothness.

Additionally, the pore sizes of Petricevic are related to cellulose membranes, and not to carbon substrates. Note column 6, line 9, which states "**cellulose membrane** (mean pore diameter: about 1 μm)." Emphasis added.

In contrast to Petricevic, claim 1 recites "an arithmetic average roughness Ra of the surface of the gas diffusion layer on a side in contact with the catalyst layer is 11 μm or less, and

wherein the gas diffusion layer includes a structure in which a **carbon powder is charged in a carbon substrate**." Emphasis added.

Thus, Applicants respectfully submit that claim 1 is not anticipated by Petricevic.

The Office Action admits, at page 5, that Applicant's Admitted Prior Art (AAPA) merely discloses an arithmetic average roughness Ra of 15 μm, and does **not** disclose the recited limitation of 11 μm or less.

The Office Action further asserts, at page 6, that Kuroki, at paragraph [0067] discloses a surface roughness in the gas diffusion later of 0.1 μm or 1 μm. However, Kuroki, at paragraph [0067], merely states, "[w]ith respect to the surface roughness of the gasket forming portion in the gas diffusion layer, if it is 0.1 μm or more, preferably, 1 μm or more, it is convenient for the surface roughness by which the **adhesion with the rubber forming the gasket** can be sufficiently secured. Since the gas diffusion layer itself generally has a porous structure, there is a structure which is within the surface roughness range, however, it is necessary to appropriately secure the surface roughness which is sufficient for the adhesion, in accordance with the filler, the amount thereof, the impregnating method and the like."

Kuroki discusses the surface of the gas diffusion layer which is in contact with the gasket. In contrast to Kuroki, the roughness limitation of claim 1 is "on a side in contact with the catalyst layer." Further, Kuroki, at Abstract, states "the gasket forming portion of the gas diffusion layer has a lower void content than the portion in contact with the catalyst layer." Thus, the gasket forming portion of the gas diffusion layer is substantially different than the portion in contact with the catalyst layer.

Additionally, Kuroki merely discloses that large surface roughness is preferable ("0.1 μm or more, preferably, 1 μm or more") for adhesion with the rubber forming the gasket. Kuroki

does not teach or suggest that an arithmetic average roughness Ra of the surface of the gas diffusion layer on a side in contact with the catalyst layer is 11 μm or less.

Thus, Applicants respectfully submit that independent claim 1 is distinguished over Petricevic, Applicants' Admitted Prior Art, and Kuroki.

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.,* 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as independent claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable.

Thus, it is respectfully submitted that dependent claim 2 is also allowable.

Additionally, Applicants respectfully submit that independent claim 4 is also allowable, for reasons similar to independent claim 1.

Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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